KNN/Regularization (Q8L9)   71% (15/21)

✓ 1. **The bias of an estimator (e.g. z^) equals...Hint: the OLS coefficients are unbias :)**
   (A) $E(z^\wedge) - z$
   (B) $E(z^2) - [E(z)]^2$
   (C) $[E(z^2) - E(z)]^2$
   (D) $E(z^2)$
   (E) I do not know

✗ 2. **The main idea of regularization is**
   (A) To introduce a small amount of bias in order to have less variance.
   (B) To introduce a small amount of variance in order to have less bias.
   (C) To introduce a small amount of variance and bias in order to have less bias.
   (D) I do not know

✗ 3. **How the tune of any parametr can be made**
   (A) using Cross validation
   (B) It is impossible
   (C) I do not now
   (D) using larger sample
   (E) only having population

✓ 4. **The ridge coefficient estimates shrink towards zero**
   (A) when lambda increases
   (B) when lambda decreases
   (C) when lambda = 0
   (D) I do not know

✓ 5. **Which one can shrink the slope all the way to 0?**
   (A) Lasso
   (B) Ridge
   (C) Regression
   (D) I do not know

❌ **6. When lambda = 0, we have**

- Ⓐ Ridge
- 🔴Ⓑ Lasso
- Ⓒ EL
- Ⓓ Regression
- Ⓔ I do not know

❌ **7. When alpha = 0, we have**

- Ⓐ Ridge
- 🔴Ⓑ Lasso
- Ⓒ EL
- Ⓓ Regression
- Ⓔ I do not know

✅ **8. Which function can help to perform cross-validation for regularization in R?**

- 🟢Ⓐ cv.glmnet()
- Ⓑ cros_val()
- Ⓒ glmnet(method = "cv)
- Ⓓ I do not know

✅ **9. KNN is**

- 🟢Ⓐ Data-driven
- Ⓑ Model-driven
- Ⓒ I do not now

✅ **10. KNN is**

- Ⓐ parametric method
- 🟢Ⓑ non-parametric method
- Ⓒ I do not know

✅ **11. The dependent variable of the (OLS) regression is**

- Ⓐ categorical
- Ⓑ ordinal
- 🟢Ⓒ continuous
- Ⓓ count
- Ⓔ I do not know

✗ 12. The dependent variable of the classification is

(A) categorical

(B) numeric

(C) I do not know

✗ 13. How to chose K?

(A) pick own

(B) using cross-validation

(C) the largest one

(D) the smallest one

✓ 14. KNN can be used for regression

(A) Yes

(B) No

(C) I do not know

✓ 15. In the case of KNN classification we use

(A) average of outcomes

(B) majority voting scheme

(C) I do not know

✓ 16. Which of these errors will increase constantly by increasing k?

(A) train error

(B) test error

(C) both

(D) I do not know

✓ 17. This function can be used to perform KNN in R

(A) knn()

(B) k_nn()

(C) knnreg()

(D) knearneib()

(E) I do not know

18. With the increase of k, the decision boundary will be

(A) simplified

(B) more complex

(C) I do not know

(D) unchanged

19. The best k correspond to

(A) the lowest point of test error

(B) the lowest point of train error

(C) the highest point of test error

(D) I do not know

20. KNN algorithm is sensitive to outliers

(A) True

(B) False

(C) I do not know

21. KNN

(A) is a supervised learning algorithm.

(B) is an unsupervised learning algorithm.

(C) I do not know